On July 13, 1917 (Friday night), I could hear very distant thunder about 10 p. m. from southeast of Carlisle, Pa., and could see the lightning flashing; but could not see any clouds because of the buildings. About 4 p. m. and later of the same day I had been able to observe dense thunder clouds far to the south-southeast, and later no other clouds appeared where I had seen these; so that the thunder heard at 10 p. m. may have come from the continuation of the same storm. The clouds at 4 p. m. were too far away for me to hear any thunder above the noise of the street traffic, and while the storm must have travelled quite a distance between 4 and 10 p. m., yet if the thunder at 10 p. m. was from the same storm it must have been still very distant. The very light southeast wind at the time was, of course, favorable.

In this connection the following extracts from a relatively recent note in another publication [1] will be of interest to Mr. Miller:

It is rather rarely the case that the flashes in a distant thunderstorm are so spaced that one can tell certainly to which flash a particular peal of thunder belongs: hence the difficulty of testing the [old time] figures. Such an opportunity was, however, presented to a well-known German meteorologist, Dr. R. Henning, while he was visiting a summer resort on the Baltic [Aug. 4–5, 1911, in Zinnowitz]. From his bed one night he observed the flashes of a thunderstorm far out at sea, at intervals of several minutes. The thunder was faint, but distinctly audible. On "counting seconds" he found that from 80 to 90 seconds and upward elapsed between lightning and thunder. The maximum interval was 96 seconds.

Commenting on this observation the editor of the Meteorologische Zeitschrift [Nov. 1911, 28:538] states that in northern Germany intervals of from 80 to 85 seconds between lightning and thunder have frequently been recorded. On the coast, with an abnormal distribution of atmospheric density, much greater intervals are sometimes observed. At Norden, East Friesland, C. Veenema has on several occasions noted intervals as great as 140 seconds. At ordinary temperatures of the air this would correspond to a distance of about 29 miles. In one case this observer believed the interval to have been 310 seconds, representing a distance of about 65 miles.

William Bullock Clark, 1860–1917.

By W. J. HUMPHREYS, Professor of Meteorological Physics.

[Dated: Weather Bureau, Washington, D. C., Aug. 18, 1917.]

[By direction of the Chief of Bureau.]

Dr. William Bullock Clark, professor of geology in the Johns Hopkins University, and director of the State Weather Service of Maryland, died from heart failure on July 27, at North Haven, Me.

Some of Dr. Clark's ancestors were among the earliest colonists. Two of them came to Plymouth, Mass., on the *Mayflower*. He was born at Brattleboro, Vt., December 15, 1860. His education was at the high school of Brattleboro, Amherst College (A.B. 1884, LL.D. 1908), University of Munich (Ph. D. 1887), Berlin, and London.

Dr. Clark's entire professional career, despite numerous offers to go elsewhere, was spent at one institution, the Johns Hopkins University, where he was instructor from 1887 to 1889, associate from 1889 to 1892, associate professor from 1892 to 1894, and professor and head of the department of geology since 1894.

In addition to carrying on numerous investigations of his own, Dr. Clark was even more productive as organizer and director of various public services, such as the Maryland State Weather Service; the Maryland Geological Survey; the Maryland State Board of Forestry; and many others. A brief outline of the purposes and results of the first of these will, perhaps, suffice to indicate the usual thoroughness of his plans and tenacity of his purposes.

This service, the Maryland State Weather Service, was organized May 1, 1891, under the joint auspices of the Johns Hopkins University, the Maryland Agricultural College, and the U. S. Weather Bureau, with Dr. Clark as Director, a position he held continuously until his death, more than 26 years later.

In a letter to the governor of Maryland, dated July 1, 1899, transmitting the first volume of a new series of reports, Dr. Clark says:

The Board of Control plan to publish in the near future a full account of the climatic features of Maryland, in which the physiography, the meteorology, the hydrography, the medical climatology, the agricultural soils, the forestry, the crop conditions, and the flora and fauna of the State will be considered.

The last report, dated January, 1916, says:

The State Weather Service in addition to the publication of many earlier reports has issued three large comprehensive volumes as follows:

Volume One deals (1) with the Physiography of the State, in which the character of the lowlands and the highlands, the drainage channels and the shore lines of the estuaries, bays and ocean front are described as a basis of climatic differentiation, and (2) with the Meteorology of the State, in which the different factors relating to rainfall and temperature throughout the State are discussed in much detail. This latter report is accompanied by a series of maps showing graphically the distribution of rainfall and temperature for each month of the year.

Volume Two deals with the Weather and Climate of Baltimore and is a very exhaustive study of all available records relating to the meteorology and climatology of the chief center of population in the State. It represents the most comprehensive investigation that has ever been given to any municipality in the country.

Volume Three deals with the Plant Life of Maryland in its relation to climatic factors. The distribution of plant life, or ecology, is fully discussed; also crop distribution, since this is dependent likewise on climatic factors. Several well-known experts were employed in this study and the volume is recognized as possessing much practical as well as scientific value.

The Service is now engaged in a detailed study of the climatic features of the several counties. * * *

The Service is also engaged in a quantitative study of the results of climatic factors upon vegetation, this work being conducted under the direction of Prof. B. E. Livingston of the Johns Hopkins University. By growing various cultivated plants at different stations throughout the State under similar soil conditions and keeping a careful quantitative record of their growth, changes and physiological activity it is expected that accurate data will be obtained showing the results of the varying climatic conditions in crop production.

This indeed is a remarkable showing. In the death of Dr. Clark, meteorology and climatology have lost a most efficient promotor, geology one of its ablest exponents, and the public a most capable and devoted servant.

WILLIAM BULLOCK CLARK.

In another place the bureau comments officially on the passing of Prof. W. B. Clark, founder and first director of the Maryland State Weather Service.

Five years of association with Dr. Clark inspired in the present writer a sincere regard for him as a man and a friend. To his associates and the students in his department Dr. Clark was not merely a teacher but a brother and a friend, always ready to recognize and encourage the slightest show of enterprise, effort, or ability; always cheering and heartening all about him and unconsciously offering his own great store of energy and enthusiasm as a stimulus to even the humblest of his associates. In the field Clark was the best companion one could desire, full of work and full of humor, a splendid planner of excursions and expeditions, a no less successful executive in carrying them to a pleasant and profitable close.

While primarily devoted to Geology and Palæontology, and making a brilliant mark for himself in the latter branch, he developed abundant enthusiasm for helpful work in other branches of science. The series of splen-

[1] Scientific American, New York, Jan. 20, 1912, 106:77.

didly planned and sumptuously appareled reports on the geology of Maryland were fully matched by the corresponding series of reports on the climate and weather of the State. Moreover the two sciences were by no means held rigidly apart in his philosophical view of things. The contents of the elegant epoch-making first Report of the Maryland Weather Service in 1899 testified to Clark's broad understanding of the interrelation necessarily existing between geology and meteorology. The volume was full of promise for the climatologist in Maryland, and the promise was richly fulfilled. Taking advantage of his position as State Geologist, he inserted in each of the county geological reports a more or less detailed chapter on the climate of the county, prepared by an experienced climatologist. Thus there appeared with brief intermissions—

Climate of Allegany County, by O. L. Fassig. 15p. 1900.
Climate of Cecil County, by O. L. Fassig. 13p. 1902.
Climate of Garrett County, by O. L. Fassig. 21p. 1902.
Climate of Calvert County, by C. F. von Herrmann. 37p. 1907.
Climate of Saint Mary's County, by C. F. von Herrmann. 30p. 1907.
Climate of Prince George's County, by W. H. Alexander. 21p. 1911.
Climate of Ann Arundel County, by O. L. Fassig. 18p. 1917.

Again in the report of the Maryland Geological Survey, volume 6 (Baltimore, 1906), we find Clark devoting 14 pages (224–237) to a review of the general climate of the State in its bearings on the engineering, roadbuilding, and geological problems peculiar to Maryland.

The second and third volumes of the Maryland Weather Service, as the above quotations show, have also proven patterns and standards for subsequent similar publications for other regions. At least one other treatise, published in the United States in 1913, shows the strong influence exerted by the publications planned by Dr. Clark. E. L. Voss[1] states that he took the plan of Vol. II as a model for his own monograph on the rainfall of South America, being unable to find another work as good.

It is but just to point out here that in all this work for Maryland geology and climatology Prof. Clark secured and retained the hearty cooperation of the much wealthier respective Federal services,[2] as well as of the Maryland State Agricultural College (through Milton Whitney), so that his energy and address enabled the State to which he devoted his life's service to profit greatly by resources beyond its own confines. And not the State alone has profited. The strong State institutions he understood to build up were buttresses in time of need to Johns Hopkins University, and the most convincing proofs of how an advanced university increases the wealth of the State that harbors her, by training the sons of the State for higher labors in the service of that State.—C. A., jr.

Thomas Mikesell, 1845–1917.

By J. WARREN SMITH, Meteorologist in Charge.
[Division of Agricultural Meteorology, Weather Bureau, Aug. 25, 1917.]

In the death of Thomas Mikesell at Wauseon, Ohio, July 18, 1917, the world lost an earnest student of nature and a remarkable phenological record was brought to a close.

Mr. Mikesell was born on the homestead farm 1 mile north of Wauseon, August 9, 1845, and was the son of William and Margaret (Bayes) Mikesell, who moved from western Pennsylvania in 1837. In June, 1863, he enlisted in Company H, Eighty-sixth Volunteer Infantry, and served until February 10, 1864.

Mr. Mikesell's special interest in meteorology dated from 1865, when he took up the study of Brocklesby's Meteorology. He soon began keeping a journal of the weather, and when, in the fall of 1869, he returned to the farm where he was born, he obtained some meteorological instruments and began a series of careful records that were not terminated until June 27, 1917, less than one month before his death. Beginning with 1882 self-registering thermometers were in use, but during all of the period he took eye readings three times daily, and

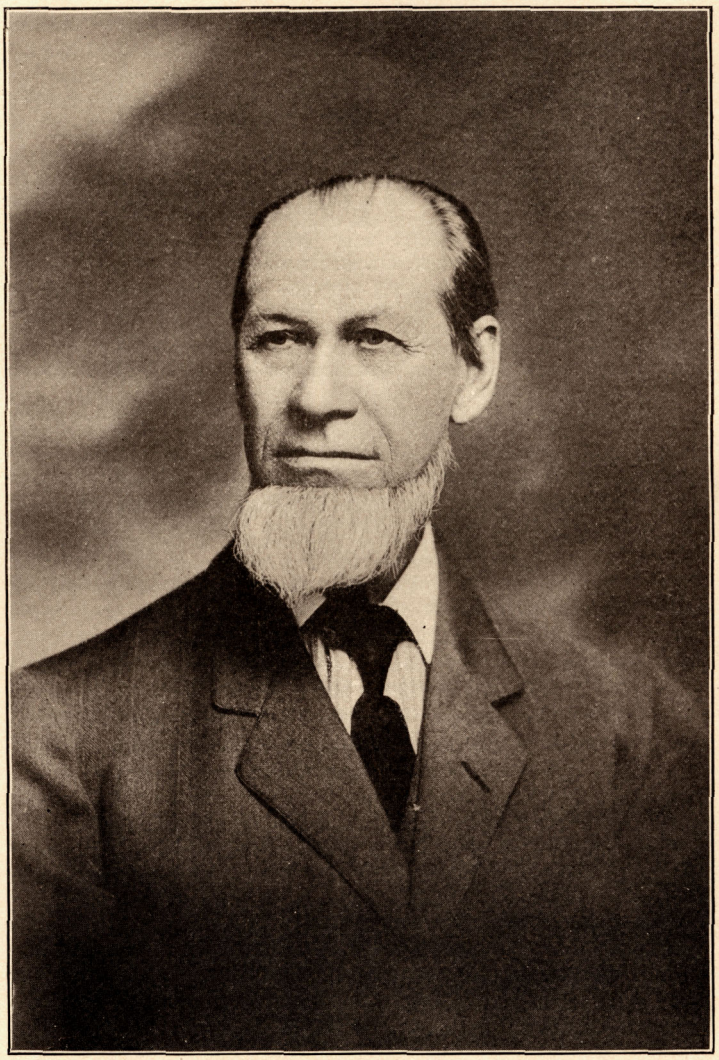

FIG. 1.—Thomas Mikesell, 1845–1917. Cooperative observer of the U. S. Signal Service, of the Ohio State Meteorological Service, and of the U. S. Weather Bureau from 1870 to 1917, at Wauseon, Ohio.

previous to 1882 frequent observations were made at the early morning and during the warmest part of the day to obtain the extremes of temperature for each twenty-four hours.

It was in the phenological observations, however, that the prodigious work of Mr. Mikesell, as well as his ability for observing and recording in detail passing events, was brought out. In Monthly Weather Review Supplement No. 2 (Washington, 1915) this bureau published tables showing a good many of the meteorological and phenological records kept by Mr. Mikesell. One table shows 8 different important dates in the development of 16 differ-

[1] *Voss, Ernst Ludwig.* Die Niederschlagsverhältnisse von Südamerika. Peterm. Mitteil., Ergänz'bd. 33, hft. 157. Gotha, 1907. *See p. iv of the Vorrede.*
[2] See MONTHLY WEATHER REVIEW, June 1895, 23:210; and Oct., 1899, 27:472–3.